Determining Lamprey Species Composition, Larval Distribution, and Adult Abundance in the Deschutes River, Oregon, Subbasin

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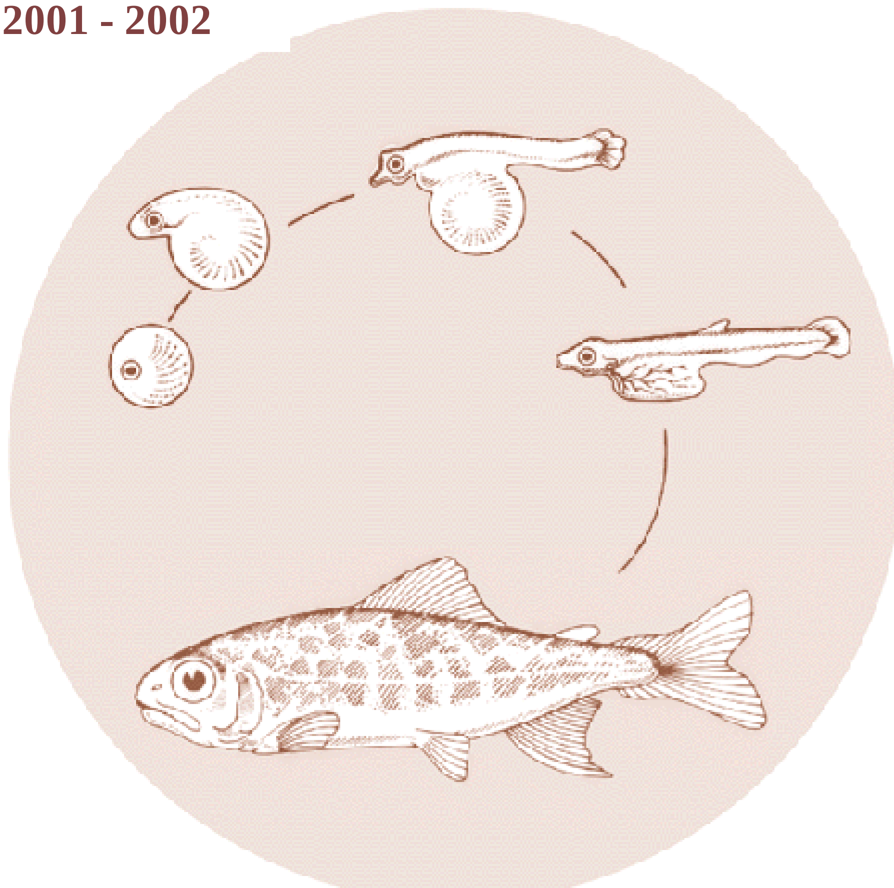

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DETERMINING LAMPREY SPECIES COMPOSITION, LARVAL DISTRIBUTION, AND ADULT ABUNDANCE IN THE DESCHUTES RIVER, OREGON, SUBBASIN

2002 Annual Report

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Abstract

Information about lamprey species composition, distribution, life history, abundance, habitat requirements and exploitation in lower Deschutes River tributaries is extremely limited. To assess the status of lampreys in the Deschutes River subbasin, baseline information is needed.

We operated to rotary screw traps in the Warm Springs River and Shitike Creek to gain an understanding of species composition, migration time and production. We identified Pacific lampreys in two life stages, ammocoete and macropthalmia. It appears that Pacific lamprey macropthalmia out-migrate during winter in the Warm Springs River. We saw peak movements by ammocoetes in the spring in Shitike Creek and winter in the Warm Springs River. We found no relationship between stream discharge and the number of lamprey collected. Very few macropthalmia were collected in Shitike Creek. Ammocoete size in the Warm Springs River and Shitike Creek were different. The ammocoetes in the Shitike Creek trap were close in size to the macropthalmia collected in the Warm Springs River trap.

We also completed planning and preparation for larval and associated habitat data collection. This preparation included purchasing necessary field equipment, selecting and marking sampling areas and attending training with US Fish and Wildlife Service (USFWS) and the Confederated Tribes of Umatilla Indian Reservation (CTUIR). Because lamprey identification is difficult we met with US Geological Survey (USGS) to assist us with larval lamprey identification techniques. We have also been working in coordination with the Oregon Department of Fish and Wildlife (ODFW) to prepare and implement creel surveys and a mark-recapture study at Sherar's Falls to estimate adult lamprey escapement.

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Introduction

There are three species of lampreys endemic to the Columbia River Basin (CRB). Two of which, Pacific lampreys and river lampreys, are anadromous (Beamish 1980). The third, western brook lamprey spends its entire life in freshwater (Beamish et al. 1982). Little information is available on the distribution and abundance of river lampreys or western brook lampreys within the CRB, although, a few studies in Canada have described their biology (Beamish 1987; Beamish 1980; Beamish and Withler 1986; Beamish and Youson 1986; Richards et al. 1982; Vladykov and Follett 1965; and Vladykov and Follett 1958). While life history information is available on Pacific lampreys there are many critical uncertainties (Beamish 1980; Beamish and Levings 1991; Close 1995; Pletcher 1963; Scott and Crossman 1973; van de Wetering 1998). Currently there are projects underway in the CRB to try and address some of these uncertainties (Bayer et al. 2000; 2001; 2002; Bayer et al. 2000; Close et al. 1995; Close 1998; 1999; 2000; 2001; Jackson 1996; 1997; Stone et al. 2001; 2002).

Pacific lamprey were once widely distributed throughout the CRB (Kan 1975; Wydoski and Whitney 1979) but have dramatically declined since the 1940's (Close et al. 1995). Sparse information is available on historic lamprey numbers. Columbia River dam counts have been used to assess the decreasing trends in the number of Pacific lampreys passing through the dams (Kostow 2002). In 1993, the state of Oregon listed Pacific lampreys as a sensitive species and increased their protection status in 1997 (OAR 635-044-0130) (Kostow 2002).

Many factors may be leading to the decline of Pacific lampreys. Poor mainstem passage is cited as a major cause for the decline (CBPLTWG 1999; Kostow 2002; Long 1968; Vella et al. 1999a; Vella et al. 199b). The lack of "lamprey friendly" screening may also present a problem at hydroelectric facilities (Kostow 2002). Degraded tributary habitat including decreased flows, increased water temperatures and poor riparian habitat may also explain the apparent decrease in abundance (CBPLTWG 1999; Close et al. 1995).

Many feel the ecological, economic and cultural significance of Pacific lampreys has been underestimated (Close et al. 1995; CRITFC 1995; Kan 1975). For the Native American tribes of the Pacific Coast, Pacific lampreys are an important subsistence, ceremonial and medicinal resource (Close et al. 1995; CRITFC 1995; Hunn and Selam 1991; Pletcher 1963). The people of Confederated Tribes of Warm Springs Reservation, Oregon (CTWSRO) harvest lampreys collected in the lower Deschutes River subbasin at Sherar's Falls. However, the lack of sufficient numbers of Pacific lampreys for cultural needs have forced them to collect lampreys at alternate spots including Willamette Falls, on the Willamette River, located in Oregon City, Oregon and at Savage Rapids, on the Rogue River, located near Grants Pass, Oregon.

Information about lamprey species composition, abundance, habitat requirements and exploitation in the lower Deschutes River tributaries are extremely limited (Kan 1975; Hammonds 1979; Beamish 1980). In order to formulate an effective recovery plan for Deschutes River lamprey, baseline biological information must first be collected and analyzed. The objectives of this project are to: (1) determine larval distribution and associated habitats in the lower Deschutes River subbasin; (2) determine species composition in the lower Deschutes subbasin; (3) estimate the number of lamprey emigrants, by developmental stage, from Warm Springs River and Shitike Creek; and (4) evaluate the feasibility of conducting a mark-recapture study to estimate the escapement of adult lampreys over Sherar's Falls and estimate the lampreys harvest at Sherar's Falls.

Project Area

We conducted this project within the Confederated Tribes of Warm Springs Reservation (Figure 1). The reservation covers 240,000 ha in central Oregon. It is located on the eastern slopes of the Cascade Mountains. The Reservation boundaries run from the crest of the Cascades to the north and west, the Deschutes River to the east and the Metolius River to the south. The lower Deschutes River flows below an impassable hydroelectric complex at river kilometer (Rkm) 161. The Pelton-Round Butte complex serves as an impassable barrier to lamprey movement.

The project was conducted in two Reservation watersheds: Warm Springs and Shitike. The Warm Springs River is the largest river system within the Reservation. The river flows for 85 kilometers and drains 54,394 hectares. Major tributaries include Beaver Creek and Mill Creek. It is the largest tributary to the lower Deschutes River. It enters the Deschutes at Rkm 135. Shitike Creek is the third largest tributary to the lower Deschutes River. It flows for 48 km and drains 36,000 hectares. Shitike Creek enters the Deschutes River at Rkm 151.

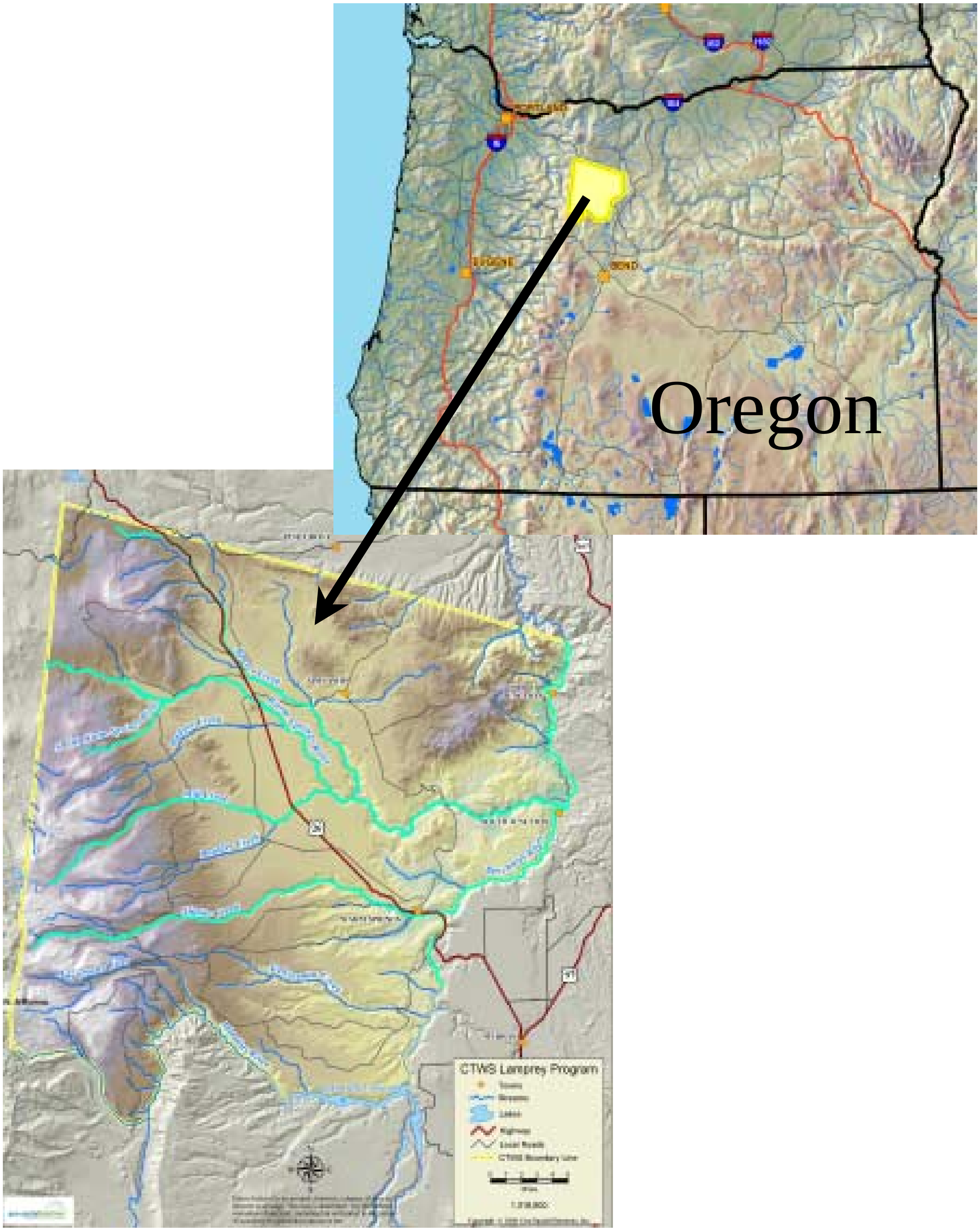

Figure 1. Map of Oregon showing the location of the Confederated Tribes of Warm Springs Reservation, Oregon.

Section I
Larval Distribution and Habitat Associations

Methods

Larval lamprey distribution and habitat associations will be surveyed in perennial tributaries to the lower Deschutes River. A hierarchical random stratified sampling design will be used. The sampling design was developed and successfully utilized in the John Day R. by Torgersen and Close (2000). It will consist of three tiers- Level I: stream reach, Level II: transect and Level III: sub-sample.

Level I: Each stream listed in table 1 will be divided into 10 km reaches from the mouth to the upstream extent of perennial stream flow or impassible barriers. Reaches will be identified using 1:75,000 quadrant maps digitized in ArcView®. Within each reach, one 60 m long sampling point will be randomly selected. The location of each sample reach will be recorded with Global Position System (GPS) equipment.

Level II: Six latitudinal transects from the left bank to the right bank will be placed 10 m apart within the sampling point.

Level III: Two sub-samples will be surveyed along each transect. One, square, 1 m^2 area sub-sample will be randomly selected within the first 3 wadeable meters of each stream bank. If the stream is less than 3 m wide (wetted channel width) sub-samples will be located successively in an upstream direction with approximately 1 m between sub-samples.

An AbP-2 Wisconsin electrofishing unit will be used to capture larval lamprey within each Level III sub-sample. The unit is specifically designed to capture larval lamprey (O'Neal 1987). The shockers will be set to deliver a constant 125 V at a rate of 3 pulse/s with a pulse train of 3:1 (Pajo and Weise 1994). Two electrofishing passes of 90 seconds will be applied to each sub-sample. Captured lamprey will be anesthetized with MS-222 and measured for length to the nearest mm and weighed to the nearest $1/10^{th}$ gram. *Lampetra* species will be identified (refer to objective 2). The fish will be released at the sampling point after they have recovered from anesthesia. All other species captured during electrofishing will be enumerated and recorded.

Habitat and water chemistry data will be collected at level I, II and III tiers. The habitat and water chemistry data to be recorded at each tier is displayed in table I-1.

Associations of lamprey larvae presence with physical habitat characteristics will be analyzed using multiple logistic regression and multivariate analysis of habitat variables. The results will relate the distribution of larval lamprey to stream characteristics within the range of habitats available in the lower Deschutes subbasin. A GIS map will be generated displaying the distribution of larval lamprey within the surveyed streams.

Results and Discussion

Due to delays in contract delivery personnel for this project were not hired until September 2002. As a result larval lamprey and associated habitat field sampling for was not conducted. Fall and winter sampling did not occur due to cold water temperatures which affects the sampling efficiency of the backpack electrofisher, lack of a ESA section 7 electrofishing permit due to the potential to effect summer steelhead and inclement winter weather.

However, perennial streams within the bounds of Warm Springs Reservation were identified for larval lamprey sampling. Each stream was divided into 10 km reaches from the mouth to the upstream extent of perennial stream flow or a barrier impassable by lampreys using a 1:75,000 quadrant map. Within each reach access points were identified and then randomly chosen for sampling. We collected a GPS coordinate and flagged 23 reaches to be sampled on-reservation.

Plans for 2003

We will begin larval lamprey distribution and habitat data collection in May and plan to continue as long as weather and water temperatures permit. Sixteen streams and 47 random sampling points have been identified in the Warm Springs River and Shitike Creek drainages. If time permits, we will extend our surveys to other streams.

Table I-1. Habitat and water quality data to be collected at each sampling tier.

Habitat and Water Chemistry Parameters	Level I Sample Reach	Level II Transect	Level III Sub-Sample
Conductivity	X		
pH	X		
H_2O Temperature	X		
Mean Water Depth			X
Water Velocity			X
Substrate Type			X
Channel Unit Type (riffle, pool, etc)			X
Wetted Channel Width		X	
Flood Prone Width	X		
Bankfull Channel Width		X	
Channel Slope	X		
Canopy Density		X	

Section II
Determine Species Composition of *Lampetra*

Methods

During larval distribution surveys lamprey will be classified into three categories (A, B and C) based upon similar external morphological characteristics according to Richards et al. (1982). A sub-sample of 30 fish (15 from objective 1 and 15 from objective 3) from each category (A-C) will be sacrificed and preserved in a 4-5% ethanol solution. The collections will occur during 2003.

Preserved specimens will be analyzed by personnel from the USGS-Columbia River Research Laboratory (CRRL) familiar with larval lamprey species identification. Specimens of known species will be placed in a permanent collection. Our staff attended training with USGS staff to learn larval lamprey identification and the proper methods of preserving specimens for identification.

Results and Discussion

It is currently unknown what *Lampetra* species other than Pacific lamprey are present in the Deschutes River subbasin. Species identification for larval lamprey is problematic due to similar morphologies (Richards 1980, Bond 1977).

Our staff attended training with USGS staff to learn larval lamprey identification and the proper methods of preserving specimens for identification.

Because identification is problematic we purchased sample bottles and ethanol to preserve lamprey specimens for shipment to USGS for positive identification. Based on the training received, we feel that we have an understanding of lamprey identification and their multiple metamorphosing stages.

Plans for 2003

Our plans for 2003 include collecting up to 15 lamprey from rotary screw traps in Shitike Creek and Warm Springs River to be sent to USGS for species identification (Objective 3). We will also collect 15 larval lampreys during larval distribution sampling to send to USGS for identification (Objective 1). These samples will include species in three morphological stages as categorized by Richards et al. (1982).

Section III

Estimate the Number of Lamprey Emigrants

Methods

We fished a floating rotary screw trap with a 2.4 m cone diameter at Rkm 1.5 in the Warm Springs River to collect lampreys from April through mid-June 2002, and late-September 2002 through March 2003. We also fished a 1.5 m cone diameter floating rotary screw trap in Shitike Creek (Rkm 1.2). The Shitike Creek trap was fished from March through August 2002, and from October 2002, through March 2003. We operated both traps 5 days/week, 24 hrs/day. Each trap was checked once per day except in high water conditions when the trap was checked more frequently to remove debris. During extreme high or low water conditions we removed the traps.

Captured lampreys were anesthetized with MS-222 then identified to species, stage of metamorphosis, total lengths measured and checked for anomalies. After recovery from anesthesia the lampreys were released below the trap site.

Flows were monitored at USGS gaging stations located near the Shitike Creek (USGS gaging station 14093000) and Warm Springs River (USGS gaging station 14097100) rotary screw traps throughout the trapping period. This information will be used to compare emigrant timing with stream discharge to determine if there is a significant relationship among years.

Results and Discussion

Overall Catch

We collected a total of 1,057 lampreys in the Shitike Creek and Warm Springs River rotary screw traps (Appendix A). Seventy-two percent of lampreys were collected in the Shitike Creek trap and the remaining (28%) were collected in the Warm Springs River. Of the 1,057 lampreys collected, 50% of the lampreys were identified as Pacific lampreys. The remaining 50% were unidentified. Unidentified lampreys were collected prior to lamprey identification training in October 2002.   Fourteen percent of the lamprey that we collected had anomalies in both Shitike Creek and the Warm Springs River. Anomalies included bruising, swelling, predator marks and abrasions.

Shitike Creek

Lampreys were collected during 91 of the 125 days the rotary screw trap was fished in Shitike Creek (Appendix A). We collected a total of 764 lampreys in Shitike Creek with 39% identified as Pacific lampreys. Ammocoetes made up more than 99% of the total catch.

Starting in November 2002, total lengths were recorded from all lampreys collected. The mean length for Pacific lamprey ammocoetes was 104 mm with a maximum length of 156 mm and a minimum of 21 mm (Appendix B). The greatest percentage (23%) of Pacific lampreys collected were between 110-119 mm (Figure III-1).

We observed peak movement (n=187) in Pacific lamprey ammocoetes during May 2002. We collected 185 ammocoetes and 2 macropthalmia (Figure III-2). Lampreys were collected in all months that the traps were operated except October 2002.

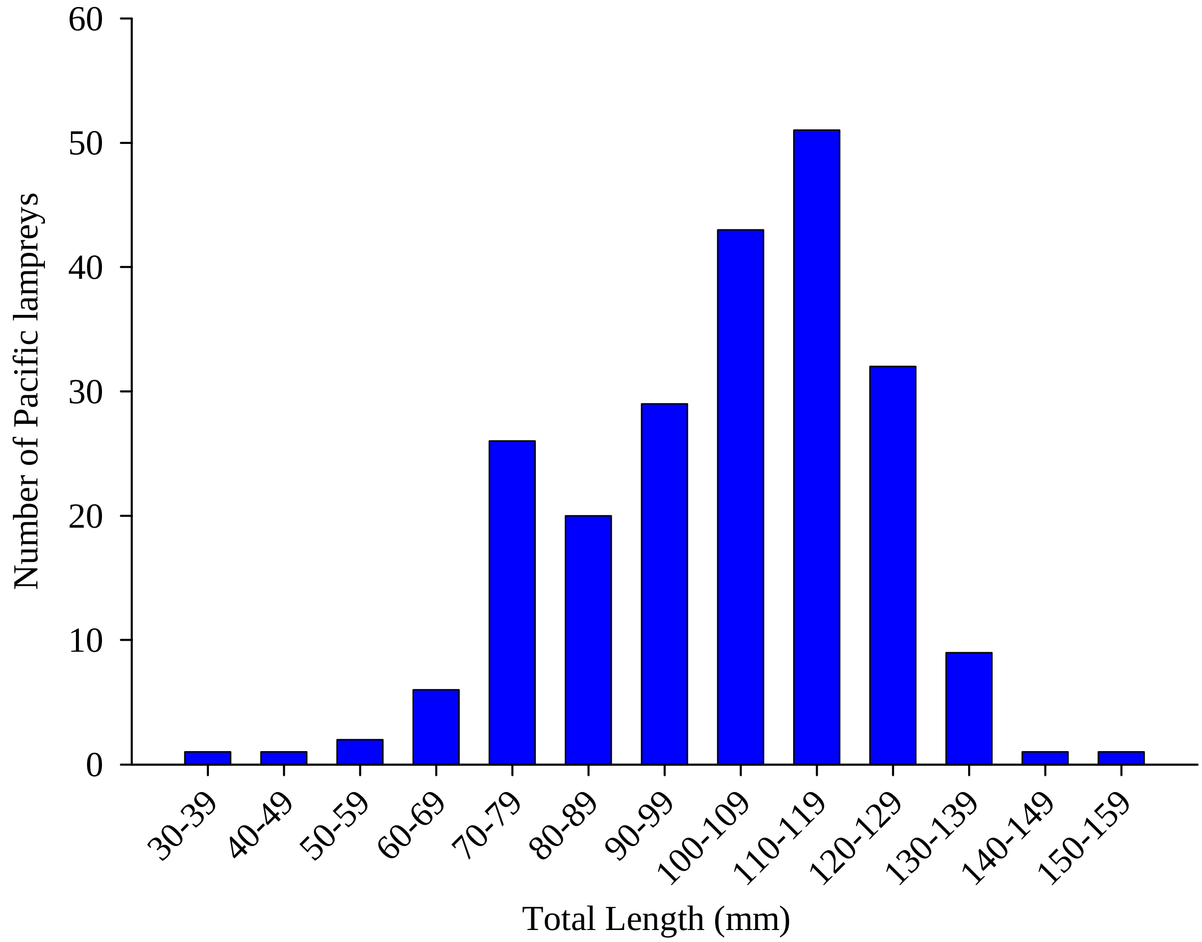

Figure III-1. Length frequency for Pacific lampreys captured in Shitike Creek, November 2002-March 2003.

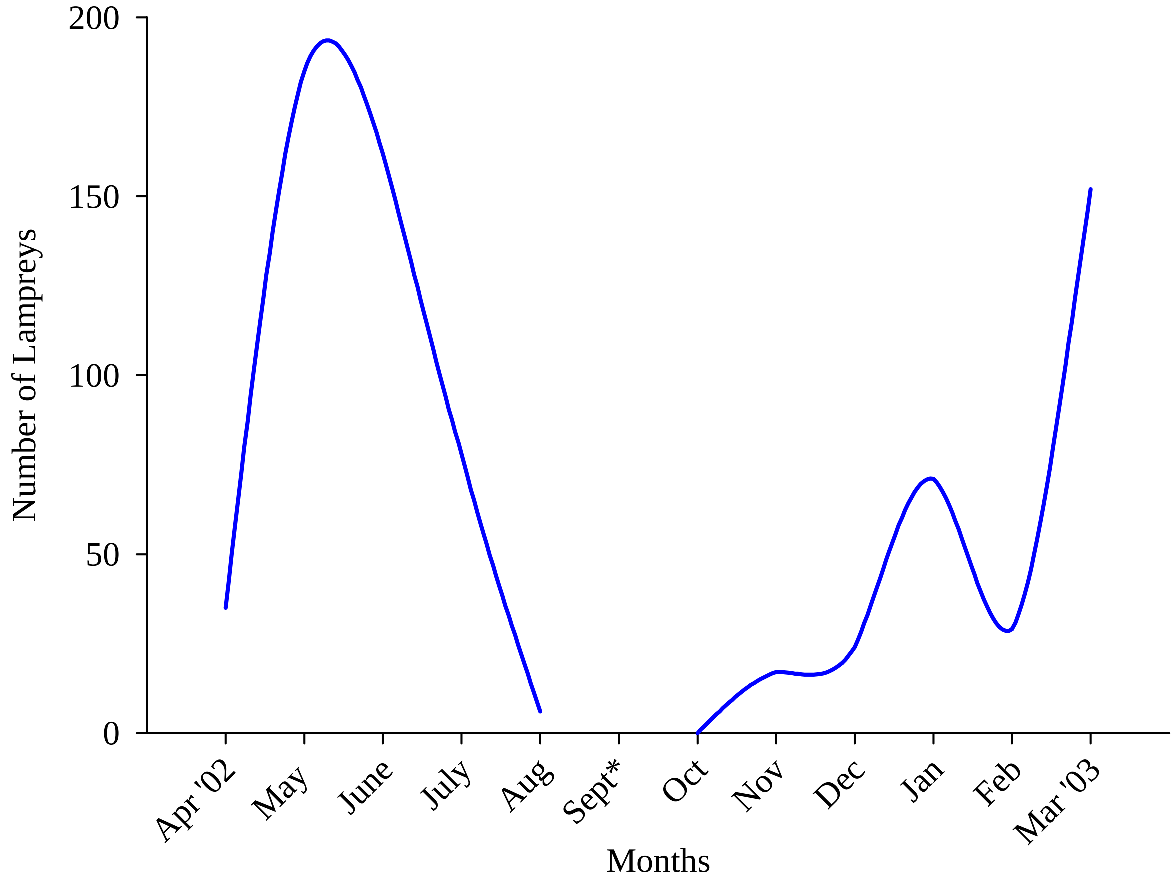

Figure III-2. Movement patterns of Pacific lamprey ammocoetes in Shitike Creek, 2002-2003. *=no data collected.

Warm Springs River

The Warm Springs River rotary screw trap fished 117 days and lampreys were collected 86 of those days (Appendix A). We collected a total of 293 lampreys. Seventy-nine percent were identified as Pacific lampreys. We found that ammocoetes made up the greatest percent of the catch (80%).

The minimum, mean and maximum length for Pacific lamprey ammocoetes collected after November 2002 was 12, 80 and 135 mm, respectively (Appendix B). The greatest percentage (26%) of ammocoetes collected were between 80-89 mm (Figure III-3). Macropthalmia collected after November had a mean length of 118 mm, with a minimum length of 92 mm and a maximum of 160 mm. We found from November 2002 thru March 2003 that the mean length of ammocoetes was consistently smaller in Warm Springs River than Shitike Creek. Ammocoetes in Shitike Creek had similar total lengths as macropthalmia collected in Warm Springs River (Figure III-4). As with ammocoetes in Shitike Creek, the greatest percentage (37%) of macropthalmia collected had total lengths between 110-119 mm in length.

Nearly half (47%) of macropthalmia out-migrated during January in the Warm Springs River (Figure III-5). The largest proportion (.34) of Pacific lamprey ammocoetes movement occurred during February. We found no significant relationship between river discharge (ft^3/s) and the number of emigrants collected (Table III-1).

Table III-1. Relationship between Warm Springs River discharge (ft^3/s) and the number of lamprey collected, 2002-2003.

Life History Stage	R^2	Y
Ammocoetes	0.1005	Y=0.0048x + -0.0127
Macropthalmia	0.0092	Y=-0.0008x + 0.7656
All Lamprey	0.0471	Y=0.0041x + 0.7256

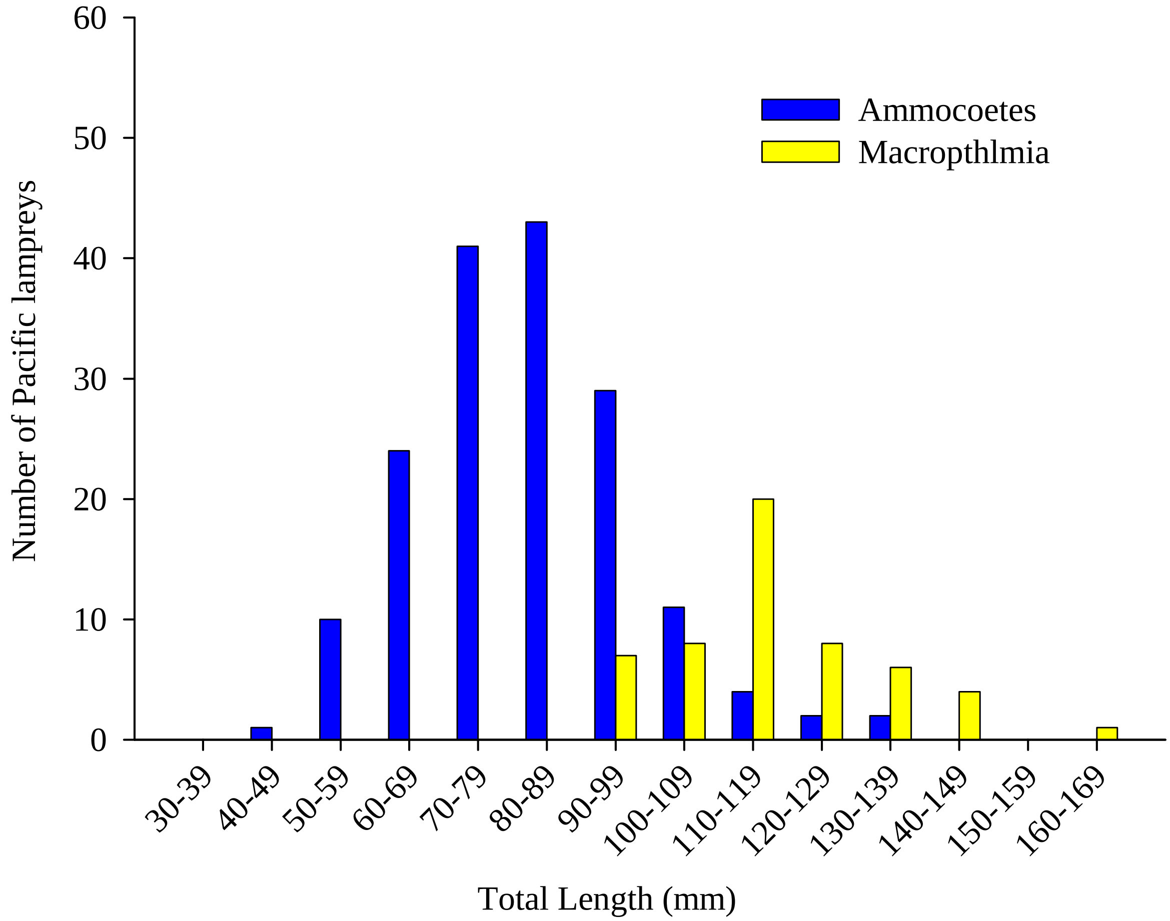

Figure III-3. Length frequency for Pacific lampreys captured in Warm Springs River, November 2002-March 2003.

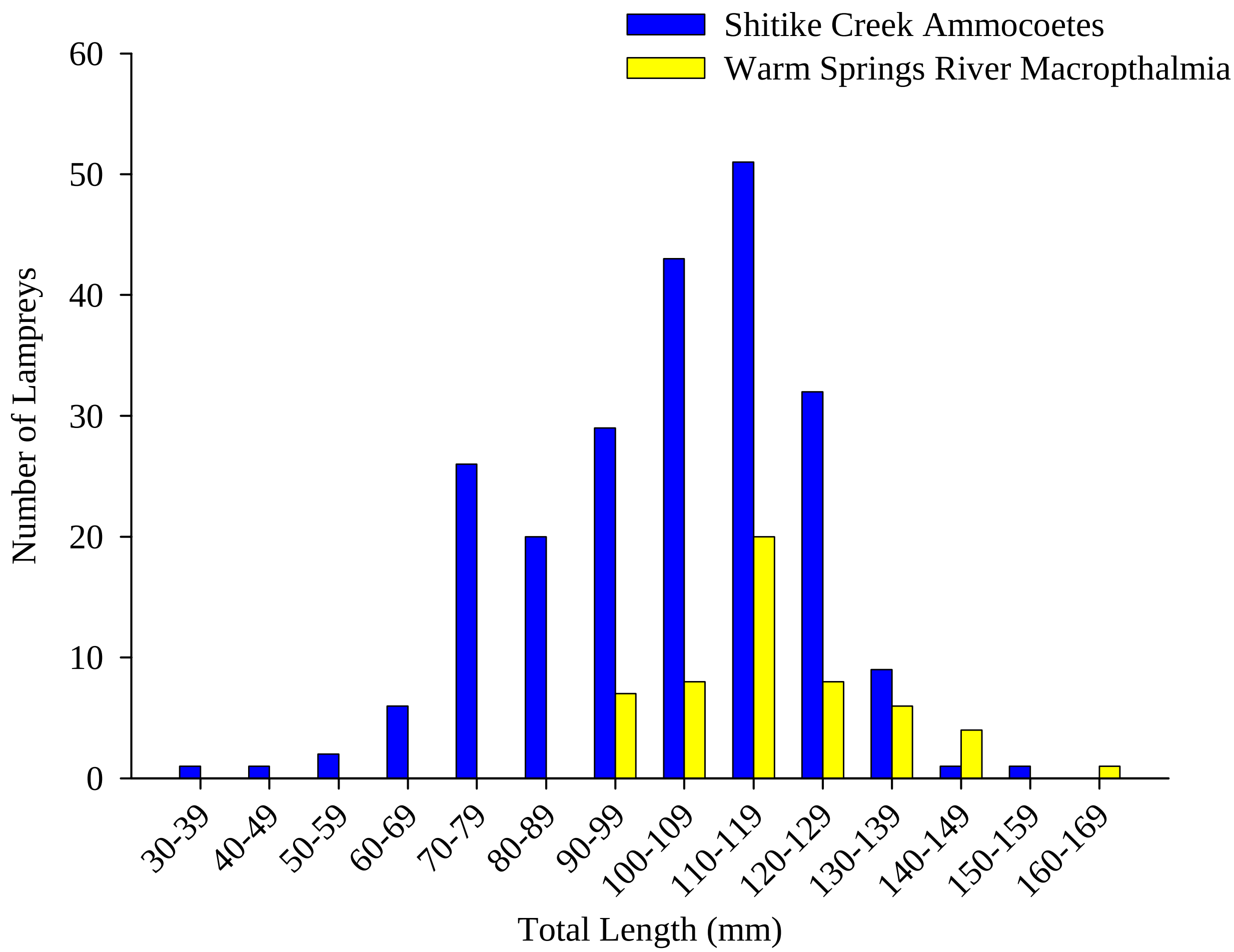

Figure III-4. Length frequency for ammocoetes collected in Shitike Creek and macropthalmia in Warm Springs River, 2002-2003.

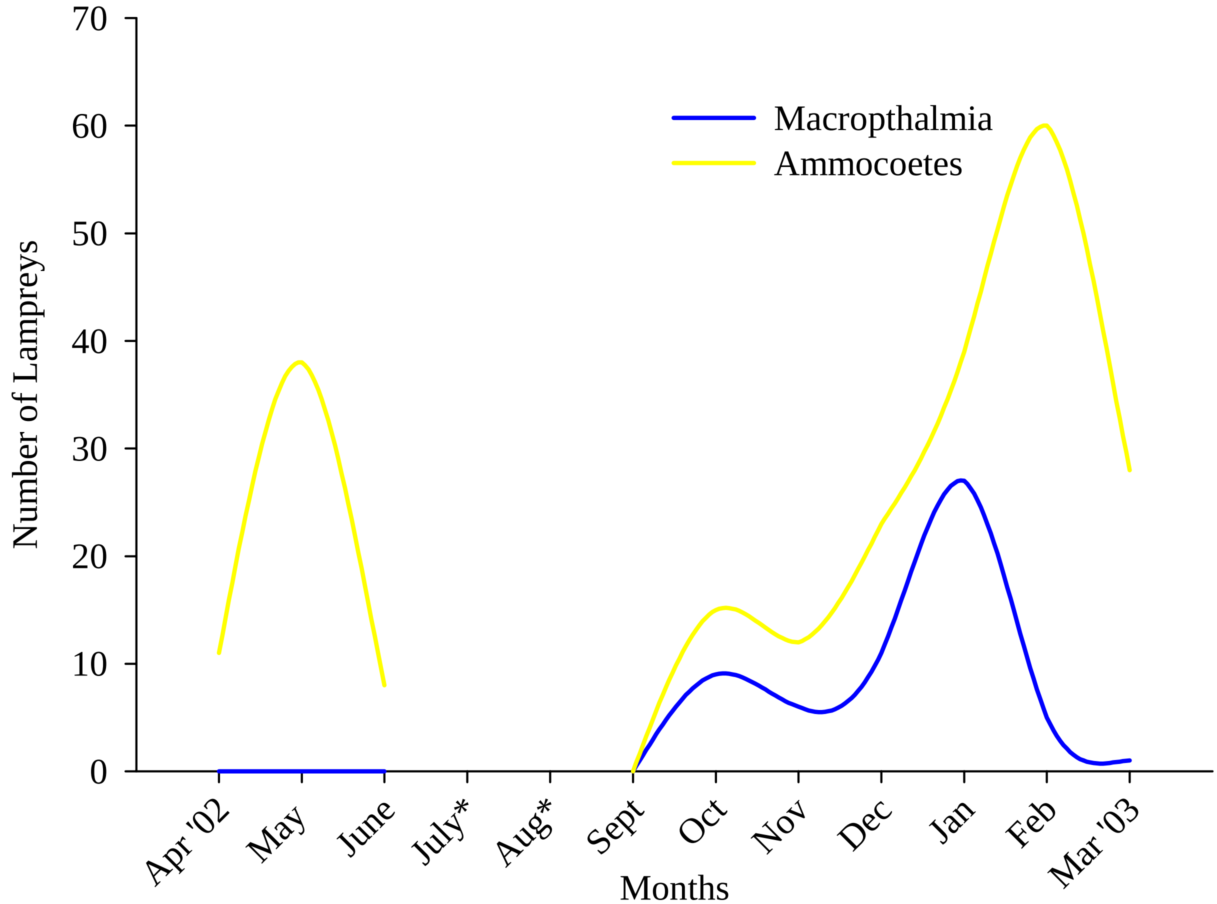

Figure III-5. Movement patterns of Pacific lamprey macropthalmia and ammocoetes in Warm Springs River, 2002-2003.

Plans for 2003

We will continue to operate the Shitike Creek and Warm Springs River screw traps as long as water conditions permit. We will start a mark-recapture study to generate a production estimate in both Shitike Creek and Warm Springs River. We will also evaluate the trap efficiencies of both rotary screw traps. We also plan to evaluate different marking techniques on larval and juvenile lampreys.

Section IV
Adult Lamprey Harvest Monitoring and Adult Escapement Estimate

Methods

In order to estimate adult lamprey escapement to the Deschutes River we will conduct a feasibility study to determine if a Peterson mark-recapture experiment is possible. Methods of collecting adult lamprey at Sherar's falls will be investigated. The utility of using live traps to capture adults will be evaluated. Additional logistics of conducting a mark-recapture escapement estimate such as run timing and marking protocols will be determined. All captured lamprey will be marked with a fin clip and released below the falls.

In conjunction with the mark-recapture feasibility project a statistical creel survey will be conducted at Sherar's Falls to estimate harvest of adult Pacific lamprey. Tribal fishers collect adult lamprey at Sherar's Falls for subsistence and ceremonial purposes during late-June through early August. A random creel survey stratified by weekdays and weekend days will be conducted by the CTWSRO to estimate harvest in the tribal fishery. Four week days and one weekend day will be randomly selected for sampling each week. Weekday and weekend samples will be expanded biweekly and added together to estimate total harvest. Samplers will check all harvested fish for marks and record total lengths. The number of unmarked and marked fish harvested (non expanded numbers) will be recorded. A harvest estimate will be generated.

The results of the escapement feasibility work may allow for an escapement estimate to be generated during 2004. An escapement estimate coupled with tributary production estimates (objective 3) and Deschutes River harvest rates will be used to develop a stock-recruitment relationship for the Deschutes subbasin. This information will assist in determining that status of lamprey in the Deschutes subbasin. Harvest rates and escapement estimates will be used by the tribal harvest manager to determine if harvest regulations are necessary.

Results and Discussion

Adult lamprey abundance estimation has never been attempted in the Deschutes River. Sherar's Falls is located downstream of all perennial tributaries to the Deschutes R at Rkm 71. A fish ladder around the falls is utilized by adult lamprey during their spawning migration during the summer. The fish ladder may serve as a suitable location to conduct a mark-recapture experiment to estimate adult escapement above the falls.

We have acquired three "lamprey pots" from USFWS in Vancouver, Washington (Figure IV-1). These traps are constructed of 95 cm length of PVC pipe with a diameter of 25 cm (Stone et al. 2002). Each end of the trap has a large funnel with a 5 cm diameter opening (Stone et al. 2002). Because the trapping of adult lampreys is difficult and the traps were not designed for use at Sherar's Falls we may modify the trap design as necessary to facilitate trap efficiency.

This objective is being coordinated with ODFW.

Plans for 2003

From June thru mid-September we plan to conduct a statistical creel to determine harvest at Sherar's Falls. In conjunction with the creel from August to mid-September, we will determine the feasibility of trapping adult lamprey for a mark-recapture study to estimate escapement of adult lamprey over Sherar's Falls. We also plan to evaluate different types of marking techniques for adult lampreys.

Figure IV-1. Picture of USFWS “lamprey pot”.

Acknowledgements

We thank the many individuals and agencies that contributed their time and expertise to make this project possible. The CTUIR, USFWS and USGS for all their training assistance. CTWSRO personnel who assisted with data collection. Mark Garner, GeoSpatial Solutions for map generation and Debbie Docherty, Bonneville Power Administration for all her assistance.

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Appendix A

Summary of rotary screw trap operations in Shitike Creek and Warm Springs River

Appendix A; Table 1. Number of days the rotary screw trap was operated and the number of lampreys by developmental stage collected in Shitike Creek, 2002-2003. N.O.=Not operated.

	Shitike Creek												
	2002									2003			2002-2003
	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
Days Fished	4	15	14	18	18	N.O.	5	14	9	13	3	12	125
Days with Lamprey	4	14	13	14	5	N.O.	0	9	4	13	3	12	91
Days without Lamprey	0	1	1	4	13	N.O.	5	5	5	0	0	0	34
Total lampreys collected	36	187	162	78	6	N.O	0	-	-	-	-	-	469
ammocoetes	35	185	162	78	6	N.O	0	-	-	-	-	-	466
macropthalmia	1	2	0	0	0	N.O	0	-	-	-	-	-	3
Total Pacific lampreys collected	-	-	-	-	-	-	0	17	24	63	29	152	285
ammocoetes	-	-	-	-	-	-	0	16	24	62	29	152	283
macropthalmia	-	-	-	-	-	-	0	1	0	1	0	0	2

Appendix A; Table 2. Number of days the rotary screw trap was operated and the number of lampreys by developmental stage collected in Warm Springs River, 2002-2003. N.O.=not operated.

	Warm Springs River												
	2002									2003			2002-2003
	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total
Days Fished	5	17	7	N.O.	N.O.	2	19	14	11	14	16	12	117
Days with Lamprey	4	13	4	N.O.	N.O.	0	15	10	8	11	12	9	86
Days without Lamprey	1	4	3	N.O.	N.O.	2	4	4	3	3	4	3	31
Total lampreys collected	11	38	8	N.O.	N.O.	0	5	-	-	-	-	-	62
Ammocoetes	11	38	8	N.O.	N.O.	0	3	-	-	-	-	-	60
Macropthalmia	0	0	0	N.O.	N.O.	0	2	-	-	-	-	-	2
Total Pacific lampreys collected	-	-	-	-	-	-	19	18	34	66	65	29	231
Ammocoetes	-	-	-	-	-	-	12	12	23	39	60	28	174
Macropthalmia	-	-	-	-	-	-	7	6	11	27	5	1	57

Appendix B

Pacific Lamprey length statistics from the Warm Springs River and Shitike Creek rotary screw traps

Appendix B; Table 1. Length statistics for Pacific lamprey ammocoetes collected in the Shitike Creek rotary screw trap from November 2002-March 2003.

	Shitike Creek					
	Nov	Dec	Jan	Feb	Mar	All
Mean	109.11	107.17	107.14	95.72	102.30	103.65
Standard deviation	18.30	18.28	23.36	23.37	19.06	20.71
Standard error	4.31	3.73	2.75	4.34	1.55	1.21
95% CI	9.10	7.72	5.49	8.89	3.05	2.37
99% CI	12.50	10.48	7.29	11.99	4.03	3.13
Sample size	18.00	24.00	72.00	29.00	152.00	295.00
Sample total	1964.00	2572.00	7714.00	2776.00	15550.00	30576.00
Minimum	76.00	60.00	21.00	35.00	47.00	21.00
Maximum	137.00	131.00	142.00	132.00	156.00	156.00

Appendix B; Table 2. Length statistics for Pacific lamprey ammocoetes collected in the Warm Springs River rotary screw trap from November 2002-March 2003.

	Warm Springs River					
	Nov	Dec	Jan	Feb	Mar	All
Mean	75.00	83.35	82.00	78.00	82.68	80.34
Standard deviation	10.82	21.28	13.68	16.80	16.00	16.38
Standard error	3.26	4.44	2.19	2.17	3.02	1.29
95% CI	7.27	9.20	4.43	4.34	6.21	2.55
99% CI	10.34	12.51	5.94	5.77	8.38	3.37
Sample size	11.00	23.00	39.00	60.00	28.00	161.00
Sample total	825.00	1917.00	3198.00	4680.00	2315.00	12935.00
Minimum	58.00	12.00	51.00	40.00	55.00	12.00
Maximum	93.00	132.00	112.00	135.00	125.00	135.00

Appendix B; Table 2. Length statistics for Pacific lamprey macropthalmia collected in the Warm Springs River rotary screw trap from November 2002-March 2003.

	Warm Springs River					
	Nov	Dec	Jan	Feb	Mar	All
Mean	108.00	114.55	120.33	118.60	130.00	117.60
Standard deviation	8.37	12.89	17.43	11.97	0.00	15.32
Standard error	3.42	3.89	3.35	5.35	0.00	2.17
95% CI	8.78	8.66	6.90	14.86	--	4.35
99% CI	13.77	12.32	9.32	24.64	--	5.81
Sample size	6.00	11.00	27.00	5.00	1.00	50.00
Sample total	648.00	1260.00	3249.00	593.00	130.00	5880.00
Minimum	97.00	92.00	95.00	100.00	130.00	92.00
Maximum	116.00	130.00	160.00	131.00	130.00	160.00